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Functional Analysis of Language Interactions between Down Syndrome Children and Their Mothers

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ABSTRACT

A 20-minute videotape sample was obtained of the language interactions between 20 Down syndrome children (ages 38 to 107 months) and their mothers during informal playtime. Linguistic utterances of mothers and children were coded according to the following language categories: query, declarative, imperative, performative, feedback, imitation, self-repetition, and miscellaneous. To examine the influence of children's linguistic competence on the mothers' usage of different language parameters, children were divided into two groups: those with low levels of mean length of utterance (MLU), and those with higher levels of MLU. Analysis of mother-child interactions showed that, overall, more queries and more total utterances were directed toward low MLU children, whereas imitation strategy was employed more often with high MLU children. However, mothers' MLU did not differ significantly between the two groups; in other words, regardless of the children's linguistic competence, they were exposed to similar maternal speech. Thus, mothers of low MLU children were not necessarily providing inadequate verbal stimulation or insufficient response opportunities. Several figures are included. (JW)

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Abstract

Twenty Down Syndrome children and their mothers participated in this study. Language interaction during playtime was video-taped at home for twenty minutes. Mothers' language parameters are analyzed in terms of children's linguistics competence. It is found that only certain parameters of child-directed speech is influenced by the child's MLU level.

A substantial amount of literature exists describing the primary linguistic data available to nonhandicapped language-learning children (See Hoff-Ginsburg & Shutz, 1982 for a recent review). All these studies tend to support the contention that adult language users typically bring to interactions with language-learning children a set of behaviors that might be thought of as facilitation strategies. On the basis of the adult facilitation strategy research, it is possible to identify a reasonably consistent pattern of behaviors: length reduction, complexity reduction, repetition, and paraphrasing. These behaviors characterize the antecedent modeling procedures through which the language learner is provided with appropriately responsive linguistic input.

In contrast, relatively few researchers have described language addressed to handicapped children or have compared such language with that addressed to nonhandicapped children. The results of these studies suggest that, contrary to maternal language-facilitative speech addressed to nonhandicapped children, the speech addressed to the handicapped child is of poor quality and may directly inhibit language growth (e.g., Siegel, 1967; Jones, 1972). These studies describe maternal speech to handicapped children as providing inadequate verbal stimulation, insufficient response opportunities for the child, and lacking essential sensitivity to the child's level of functioning (Leifer & Lewis, 1978).

In light of previous research findings, the present study was designed to test whether or not maternal language addressed to Down Syndrome children at two different levels of linguistic competence (as measured by MLU in morphemes) takes into account the child's linguistic competency.

Method

Subjects

The subjects consisted of 20 (11 boys and 9 girls) Down Syndrome children and their mothers. The mean age of children was 61.8 months (SD=23.6; Range=38 to 107 months). The Adaptive Behavior Composite (ABC) score on the Vineland Adaptive Behavior Scale (VABS) (Sparrow, Balla, and Cichetti, 1984) was 40.0 months (SD=16.6; Range=18 to 70 months). The mean Communication Sum (CS) on VABS was 35.0 months (SD= 18.0; Range=13.0 to 72.0 months). The children were significantly delayed in their adaptive behavior and communication functioning t=7.94 and 7.14, respectively Ps<.01. According to Karyotype all of the children were diagnosed as Trisomy 21 except one who was diagnosed as Translocation. The mean age for the mothers was 36.0 years (SD=6.0; Range=20 to 45 years). The educational level ranged from a minimum of partial college to a maximum of B.A. or B.S. degree. The mean family socioeconomic level was 51.0 (middle-class) on the Hollingshead Index of Social Status (1975). All families were Caucasian, primarily English-speaking, and had no major sensory (visual or auditory) impairment. The mother-child dyads were recruited through infant intervention programs and the Down Syndrome Guild.

Procedure

Two female observers made two visits to the home of participants. In the first visit, the VABS and a demographic inventory were administered. During this visit, the observers conducted an informal interview with the mothers and prepared the mothers and children for the introduction of videptaped recording into the research. In the second visit, language sample during playtime were videotaped for 20 minutes. The participants were not restricted to play with any toys or to remain in any position. The mothers were told "to carry on their play activities as they ordinarily do."

After a videotape was transcribed and typed, it was checked by the observer who verified its accuracy and added the necessary contextual information. The final product was a complete record of the verbal and behavioral events and the context in which these events occurred. All transcriptions were made in ordinary English orthography with phonetic notation used in cases where an English word could not be identified. Normal English punctuation was used to denote intonation patterns, to make the meaning of an utterance clear, or to indicate the pauses and stops which the speaker makes in speaking. The mood of each utterance was identified primarily on the basis of intonation and secondarily on the basis structural features. For example, declarative sentences which ended in rising intonation were coded as interrogative mood.

In order to have uniform transcription, transcribers were provided with SALT (Systematic Analysis of Language Transcripts, Miller and Chapman, 1985) instructions for preparing and marking

of the transcripts. Sample transcripts were jointly reviewed in conference to clarify and answer questions about the instructions. An utterance-by-utterance reliability of the transcriptions were estimated by having the transcribers transcribe independently three representative videotapes. The interrater agreement was computed to be .99.

A system of coding utterances of mothers and their children was developed by using the transcribed data and the videotapes in conjunction. The coding system evolved from continued observation and by employing existing categories developed mainly by Dore (1977), Hooshyar (1978), McShane (1980), and Broome and Uzgiris (1985).

Mother-Child Language Usage (MCLU) system consists of four major categories. These categories (Figures 1 and 2) describe the general character of language used by the mothers and their children. They are further subdivided into subcategories (Figures 2 and 3) which identify the specific functions of utterances used by the mothers and their children. The reliability of the MCLU coding system was measured and the overall reliability was found to be 0.946 for the mothers' categories and 0.967 for the children's categories.

Results

Figures 1 and 2 present the percentage of occurrence of the major language categories for mother and child respectively. Figures 3 and 4 present the percentage of occurrence of subcategories for mother and child respectively. The percentage of

subcategories are calculated with respect to the associated major category and not with respect to the total utterances.

To see the influence of the child's linguistic competence on the mother's usage of different parameters of language, children were divided into two groups: Low MLU group, those with a MLU of 1.50 or lower; and a high MLU group, those with a MLU greater than 1.50. One way analysis of variance of all MCLU categories was carried out and those which were found to be significantly different for low and high MLU children are reported in Table 1.

Table 1 shows that Leading Queries and Encouraging Feedback were used more frequently with low MLU children. Whereas, Guiding Performatives, Reduced, Expanded, and Modified Imitations were used more often with high MLU children. Overall, more Queries and more total utterances were directed to low MLU children. On the other hand, more Imitation strategy was utilized for high MLU children.

Discussion

The findings that a high proportion of total utterances and Queries are in line with the results of the previous studies. However, other parameters of maternal speech such as Informing, Explaining, and Labeling which resembles a language-teaching situation and presumably have a positive effect on the language acquisition were used indiscriminately by these two groups of mothers. Furthermore, it was found that regardless of the linguistic competence of the children, they were exposed to similar maternal speech. In other words, MLU of the mothers were not significantly different between the two groups. Thus, it appears

that not all of the language parameters used by the mothers of low MLU children are providing inadequate verbal stimulation, insufficient response opportunities, or of poor quality.

Further study is in progress to identify psychosocial, situational, demographic variables, developmental characteristics, and handicapping conditions that may help us to formulate more appropriate early intervention strategies for Down Syndrome children and their mothers.

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TABLE I

Language Parameters Used in Accordance with Child's MLU

Parameter	Mean* Low MLU	High MLU	F+	P
Queries (Total)	20.04	13.01	4.72	0.04
Imitation (Total)	1.96	31.94	13.75	0.01
Total Utterance (Mother)	464.86	271.33	8.75	0.01
Leading	14.70	8.02	5.22	0.03
Guiding	0.04	0.39	4.60	0.05
Encouraging	1.33	0.24	6.20	0.02
Imitation:				
Reduced	0.10	0.48	8.72	0.01
Expanded	0.42	1.14	7.67	0.01
Modified	0.14	1.29	25.54	0.01

* Except for Total Utterances all other items are percentage means.

+ DF between groups = 1; within groups = 18 for all items.

Child (%)
6
12
18
24
Request
Declarative
Personal
Performative
Response
Imitation
Self-
Repetition
Miscellaneous

Fig. 2

Mother (%)
6
12
18
Query
Declarative
Imperative
Performative
Feedback
Imitation
Self-
Repetition
Miscellaneous

Fig. 1

Language Subcategories: Mother

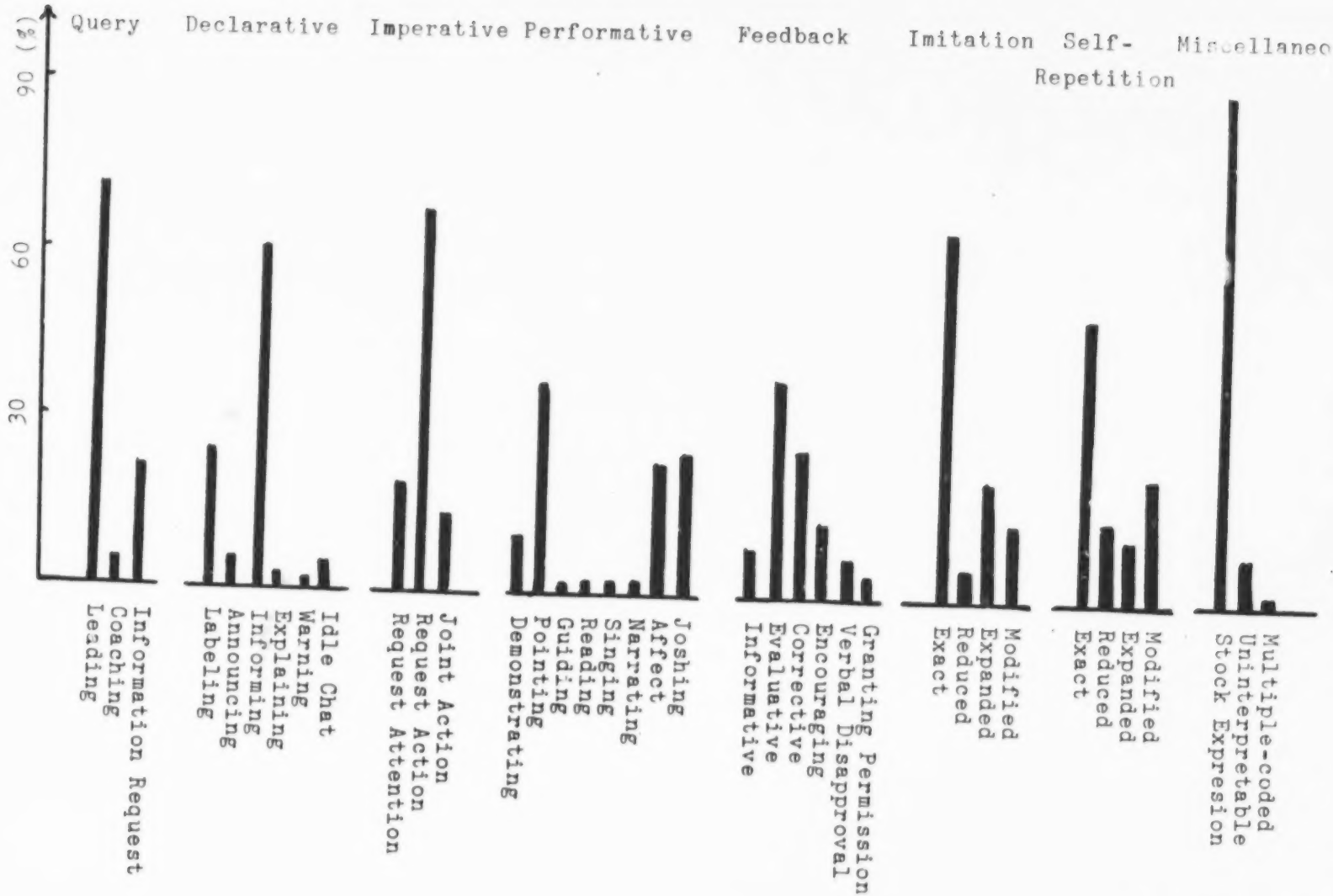

Fig. 3

Language Subcategories: Child

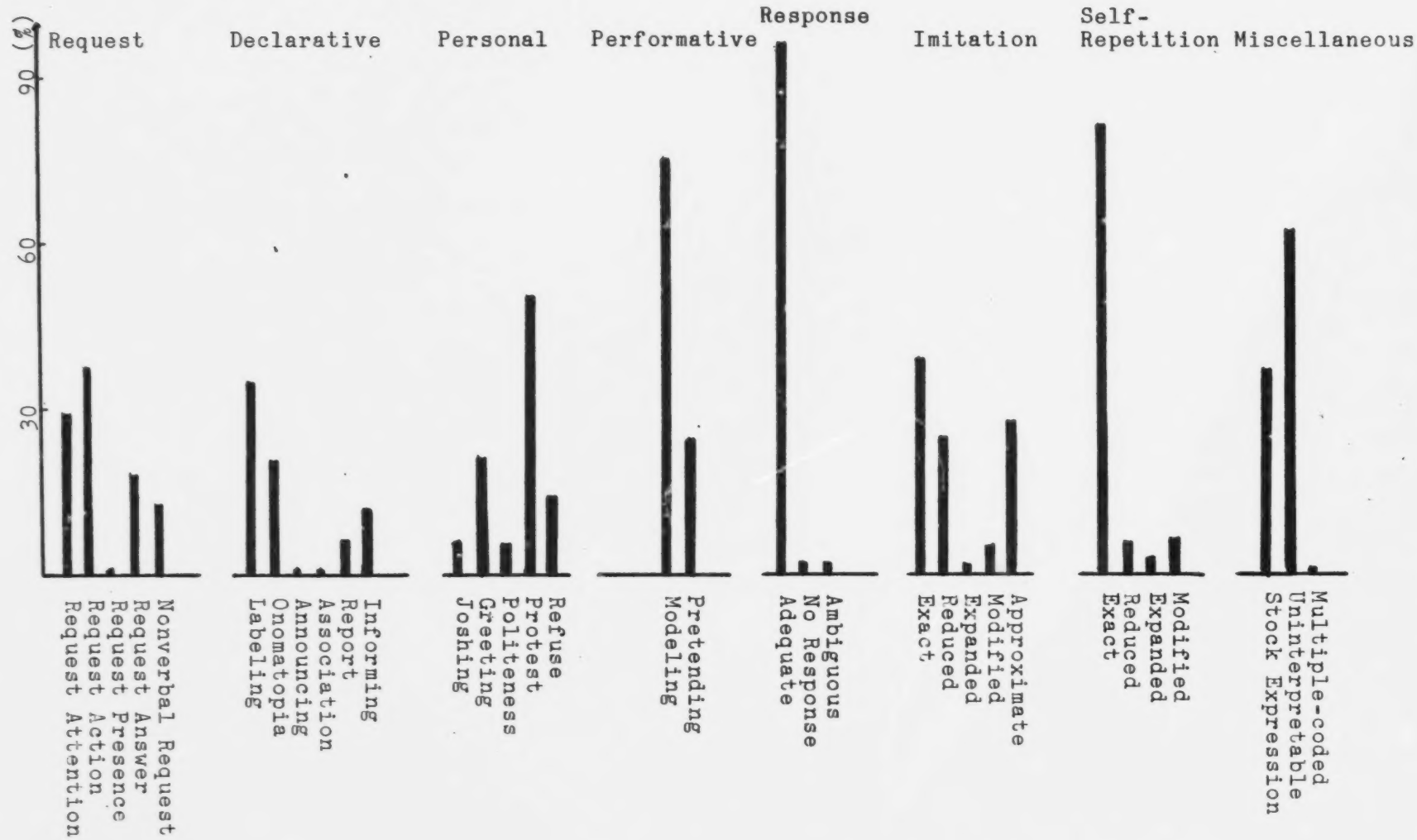

Fig. 4